

## SECTION 09300

### TILE

#### PART 1 GENERAL

##### 1.01 SUBMITTALS

- A. Product Data: Submit manufacturer's technical information and installation instructions for materials required.
- B. Samples for Initial Selection Purposes: Submit manufacturer's color charts consisting of actual tiles or sections of tile showing full range of colors, textures and patterns available for each type of tile indicated. Include samples of grout and accessories involving color selection.
- C. Samples for Verification Purposes: Submit the following:
  - 1. Samples for each type of tile and for each color and texture required, not less than 12 inches square, on plywood or hardboard backing and grouted as required.
    - a. Provide a minimum of four board-mounted tiles for sizes 4-1/4 inches and larger.
  - 2. Full size samples for each type of trim, accessory and for each color.
  - 3. 6 inch long sample of stone thresholds.
  - 4. Samples of metal edge strips.
- D. Certificates: Submit the following:
  - 1. Manufacturer's certification that grout materials being provided are suitable for the intended use, meet or exceed the referenced standards.
  - 2. Friction test reports for floor tile.
  - 3. Prior to shipment of tile to the jobsite, deliver Master Grade Certificates to the Architect, complying with ANSI A137.1 or CTI 69.5 for special purpose tiles.

##### 1.02 QUALITY ASSURANCE

- A. Source of Material: Provide materials obtained from one source for each type and color of tile, grout, and setting materials.

##### 1.03 DELIVERY, STORAGE AND HANDLING

- A. Deliver and store packaged material in original containers with seals unbroken and labels intact until time of use. Prevent damage or contamination to materials by water, freezing, foreign matter or other causes.

##### 1.04 PROJECT CONDITIONS

- A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.
- B. Maintain temperatures at not less than 50 degrees F (10 degrees C) in tiled areas during installation and for 7 days after completion, unless higher temperatures are required by referenced installation standard or manufacturer's instructions.
- C. Shade work area from direct sunlight during the installation as needed to prevent rapid evaporation

caused by excessive heat.

- D. Observe manufacturer's recommended safety precautions, including those pertaining to ventilation.
- E. Illuminate work area during installation, providing same level and angle of illumination as will be available for final inspection.
- F. Protection:
  - 1. Protect adjacent surfaces during progress of Work of this Section.
  - 2. Close rooms and spaces to traffic of all types until mortar and grout have set for 72 hours.

## **1.05 EXTRA MATERIAL**

- A. At time of completing the installation, deliver stock of extra material to the Owner. Furnish full size units matching the units installed, packaged with protective covering for storage, and identified with appropriate labels.
  - 1. Furnish an amount equal to 5 percent of each type, size and color of ceramic tile installed.

## **PART 2 PRODUCTS**

### **2.01 PRODUCTS GENERAL**

- A. ANSI Standard for Ceramic Tile: Comply with ANSI A137.1 "American National Standard Specifications for Ceramic Tile" for types, compositions, and grades of tile indicated.
  - 1. Furnish tile complying with "Standard Grade" requirements unless otherwise indicated.
- B. ANSI Standard for Tile Installation Materials: Comply with ANSI standard referenced with products and materials indicated for setting and grouting.
- C. Coefficient of Friction: Except as may be otherwise specified or approved in advance by the Architect, provide floor tiles with coefficient of friction of 0.60 or higher in accordance with pertinent provisions of ASTM C 1028.

### **2.02 TILE PRODUCTS**

- A. Unglazed Ceramic Mosaic Tile: Provide factory-mounted flat tile, porcelain composition, plain face with cushion edges.
  - 1. Size: 2 inches by 2 inches.
  - 2. Color: As selected by Architect from manufacturer full range.
  - 3. Manufacturer: [Dal-Tile or approved equal.]
- B. Glazed Wall Tile: Provide factory-mounted flat tile, plain face with cushion edge.
  - 1. Size: 4-1/4 inches by 4-1/4 inches.
  - 2. Manufacturer, Color, Style: Dal-Tile As selected by Architect from manufacturer full range.
- C. Trim Units: Provide tile trim units to match adjoining flat tile, coordinated with sizes and coursing of adjoining flat tile where applicable. Shapes as follows:
  - 1. Base for Thinset Mortar Installations: Straight. Coved.
  - 2. Wainscot Cap for Thinset Mortar Installations: Surface bullnose.
  - 3. External Corners for Thinset Installations: Surface bullnose.
  - 4. Internal Corners: Field-buttet square corners, except use coved base and cap angle pieces

designed to member with stretcher shapes.

### **2.03 MARBLE THRESHOLDS**

- A. Provide sound ASTM C 503 Group "A" marble threshold of profile indicated with an abrasive hardness of not less than 10.0, when tested in accordance with ASTM C 241. Color as selected by Architect.

### **2.04 INSTALLATION MATERIALS**

- A. Portland Cement: ASTM C 150, Type I.
- B. Hydrated Lime: ASTM C 206 or C 207, Type S.
- C. Sand: ASTM C 144.
- D. Edge Strips: Approved standard product white metal dividers with integral anchors. 1/8 inch by 1-1/4 inch minimum depth, one piece at each opening. Schluter Systems or approved equal.
- E. Reinforcing Wire Fabric: Use at floor mortar beds. Galvanized, welded wire fabric, 2 by 2 inches by 0.062-inch diameter; comply with ASTM A 185 and ASTM A 82 except for minimum wire size.
- F. Metal Lath: Flat expanded type, weighing not less than 2.5 lbs. per sq. yd. Do not use ribbed lath.
  - 1. For interior areas, comply with ANSI A42.4, except steel need not be copper bearing and may be painted.
- G. Shower Pan Liner: Chloraloy 240, 40 mil thickness by the Noble Company.

### **2.05 BONDING MORTARS**

- A. Dry-Set Mortar: Factory-sanded Portland cement and additives; ANSI A118.1. Use only the type of dry-set mortar to set types of tile for which they are labeled.
- B. Latex Portland Cement Mortar: Latex modified Portland cement dry-set mortar; ANSI A 118.4.

### **2.06 GROUT**

- A. Wall and Floor Grout: Polymer-Modified: ANSI A118.7. Approved standard product factory mixed and packaged Portland cement tile grout material containing waterproofing and curing admixtures. Grout colors as selected by Architect.
- B. Use unsanded grout on joints 1/8" or less; use sanded grout on joints greater than 1/8".

### **2.07 CEMENTITIOUS BACKER UNITS**

- A. Provide cementitious backer units complying with ANSI A118.9, of thickness and width indicated below, and in maximum lengths available to minimize end-to-end butt joints. Install over paper backing as required by backer manufacturer.
  - 1. Thickness: 5/8 inch.

2. Thickness: Manufacturer's standard thickness, but not less than 7/16 inch, unless otherwise indicated.
3. Thickness: As indicated.
4. Width: Manufacturer's standard width, but not less than 32 inches.

B. Fasteners for Cementitious Backer Units:

1. Metal Studs, 20 gage: 1-1/4 inch Buildex Hi-Lo Bugle Head Type S screws.
2. Metal Studs, 18 gage: 1-1/4 inch Buildex T/3 self-embedding-head screws.

C. Products: Subject to compliance with requirements, provide one of the following products, or approved equal:

1. Wonderboard; Custom Building Products.
2. Util-A-Crete Concrete Backer Board; FinPan, Inc.
3. DUROCK Cement Board; USG Corp.
4. C-Cure Board 990; C-Cure.

## 2.08 MISCELLANEOUS MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the acceptance of the Architect.

## PART 3 EXECUTION

### 3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.
- B. Coordinate with other trades as needed to assure that proper substrata are provided to receive the work of this section.
- C. Floors: Portland cement mortar setting bed will be installed; do not commence installation of the setting bed until substrata are within the following tolerances:
1. Horizontal Surfaces: Level within 1/4 inch in 10 feet in all directions;
- D. Walls: Tile units will be thin-set directly to the substrata, do not commence installation of the tile units until substrata are within the following tolerances:
1. Vertical Surfaces: Plumb within 1/8 inch in 8 feet in all directions.
- E. Condition of Surfaces to Receive Tile:
1. Verify that surfaces to receive mortar setting bed and tile are firm, dry, clean, and free from oily or waxy films and curing compounds.
  2. Verify that grounds, anchors, plugs, recess frames, bucks, electrical work, mechanical work, and similar items in or behind the tile have been installed before proceeding with installation of mortar bed or tile.

### 3.02 SUBSTRATA AND SETTING BEDS

- A. General:

1. Comply with pertinent provisions of the referenced standards, except as otherwise directed by the Architect or specified herein.
  2. Maintain minimum temperature limits and installation practices recommended by materials manufacturers.
- B. Provide cleavage membranes, waterproof membranes, and setting beds as called for on the drawings or specified herein.
1. Install membranes in strict accordance with the manufacturers' recommendations.
  2. Where such items are not specifically called for on the drawings, but are required for a complete and proper installation, notify the Architect and provide as directed.
- C. Do not install setting beds over membrane until the membrane has been tested and accepted.
- D. Installing cementitious backer units on walls:
1. Pre-cut the units to size, and make necessary cutouts.
  2. Fasten units at 8 inches o.c. where joints occur over a stud, using the manufacturer's approved fasteners and washers. Use fastener combined with countersunk washer to secure two abutting units.
  3. Where two units abut, leave a gap from 1/8 inch to 3/16 inch wide, fill solid with mortar, and cover with the fiberglass tape embedded in a skim coat of mortar.

### 3.03 INSTALLING TILE

- A. General:
1. Comply with pertinent provisions of the referenced standards, except as otherwise directed by the Architect or specified herein.
  2. Maintain minimum temperature limits and installation practices recommended by materials manufacturers.
  3. Do not install tile floors over membrane until the membrane has been tested and accepted.
  4. Mix and use proprietary materials in strict accordance with the manufacturers' printed instructions.
  5. Prepare the surfaces, set, fit, grout, and clean the work of this section in strict accordance with the referenced standards and the manufacturers' recommendations.
- B. Placement Method: Install tile using the following setting beds as shown or scheduled. If not otherwise indicated, use portland cement mortar where thickness and substrate permits.
1. Portland Cement Mortar Bed Installations:
    - a. Dry-set mortar over cured mortar bed, ANSI A108.5.
    - b. Plastic mortar bed, ANSI A108.1, or dry-set mortar over cured mortar bed, ANSI A108.5, at Contractor's option.
  2. Thin-Set Installations:
    - a. Dry-set portland cement mortar or latex-portland cement mortar, ANSI A108.5.
- C. Install in accordance with pertinent provisions of the specified ANSI standards, pressing and beating tile into place to obtain 100 percent coverage by mortar on the back of each tile. Back-butter the tiles if necessary to achieve 100 percent coverage.
- D. Limits of Tile:
1. Extend tile into recesses and under equipment and fixtures to form a complete covering without interruptions.
  2. Terminate tile neatly at obstructions, edges, and corners, without disruption of pattern or joint

alignment.

- E. Joining Pattern:
  - 1. Lay tile in grid pattern unless otherwise indicated on the drawings or directed by the Architect.
  - 2. Align joints when adjoining tiles on floor, base, trim, and walls are the same size.
  - 3. Layout tile work, and center the tile fields both directions in each space or on each wall area.
  - 4. Adjust to minimize tile cutting.
  - 5. Provide uniform joint widths.
- F. Allowable variations in finished work: Do not exceed the following deviations from level and plumb, and from elevations, locations, slopes, and alignments shown:
  - 1. Horizontal surfaces: 1/8 inch in 10 feet in all directions.
  - 2. Vertical surfaces: 1/8 inch in 8 feet in all directions.

### 3.04 EXPANSION/CONTROL JOINTS

- A. Comply with TCA Handbook EJ171. Provide expansion/control joints where indicated on the drawings, and as follows:
  - 1. Interior: 24 feet to 36 feet in each direction;
  - 2. Exterior: 12 feet to 16 feet in each direction;
  - 3. Interior tilework exposed to direct sunlight or moisture: 12 feet to 16 feet in each direction;
  - 4. Where tile abuts restraining surfaces such as perimeter walls, dissimilar floors, curbs, columns, pipes, ceilings, and where changes occur in backing materials;
  - 5. At perimeter walls in rooms and spaces larger than 12 feet on one side;
  - 6. As continuation of expansion joints, control joints, cold joints, and seismic joints in the building structure which occur in tiled areas, making such joints in the tilework not less in width than the joint which is being continued.
- B. Extend openings for joints completely through the tile, mortar, mortar bed, and reinforcing.
  - 1. Make openings for joints the same width as the tile joints.
  - 2. Keep joints open and free from mortar and grout until filled with sealant.
  - 3. Apply joint primer in all wet areas, and apply elsewhere as recommended by the sealant manufacturer.
  - 4. Make joint edges free from dirt, oils, wax, and other contaminants.
- C. Seal between tile and penetration and restraining surfaces with sealant matching the color of grout/joint filler.
- D. Perform sealant installation in accordance with pertinent provisions of Section 07920 of these specifications.

### 3.05 THRESHOLDS

- A. Edge Strips: Install edge strips at openings where threshold has not been called for, but where tile floor abuts other flooring material at same level.
- B. Marble Thresholds: Install marble thresholds where shown on the drawings, using materials and methods specified for installing tile.
- C. Where thresholds are detailed to be installed over tile, install with a full bedding of bonding mortar.

### 3.06 GROUTING

#### A. General:

1. Do not begin grouting floor tiles until they are firmly set and, in no case, in less than 48 hours after they have been installed.
2. Remove spacers, ropes, glue, and similar foreign matter prior to grouting.
3. When using proprietary grout, adhere strictly to the manufacturer's directions unless otherwise specified or approved in advance by the Architect.

#### B. Installation:

1. Mix grout by hand or with a slow-speed drill motor not exceeding 300 rpm, achieving a stiff non-slumping consistency, and using the minimum amount of liquid to achieve a workable mix.
2. Force the maximum amount of the approved grout into joints in accordance with pertinent recommendations contained in ANSI A108.10.
3. Fill the joints of cushion-edge tile to depth of the cushion; fill joints of square-edge tile flush with the surface.
4. Fill all gaps and skips.
  - a. Do not permit mortar or mounting mesh to show through grouted joints.
  - b. Provide hard finished grout which is uniform in color, smooth, and without voids, pin holes, or low spots.
  - c. Leave tile clean.

### 3.07 CURING

- #### A. Damp cure all tile installations, including portland cement grouts, for 72 hours minimum.
1. Cover with 40 lb kraft paper.
  2. Do not use polyethylene sheets directly over tile on horizontal surfaces.

### 3.08 CLEANING AND POLISHING

- #### A. After completion of setting and grouting, thoroughly clean and polish the tile.
1. Do not use acid or acid cleaners to clean tile.
  2. When the tile is thoroughly clean and dry, polish glazed tile with clean dry cloths.

### 3.09 REPLACEMENT

- #### A. Replace cracked, chipped, broken, and otherwise defective tiles.
- #### B. Remove work not complying with requirements of the Contract Documents or the referenced standards, and promptly replace with work which does comply.

END OF SECTION